

**Hungarian and Yugoslav Airfields**

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**Number**

The former Hungarian airfield has been enlarged. It is located about five kilometers northwest of Number, on the road from Apatin, and covers an area approximately two by three kilometers.

It has only one take-off runway, which is completely intact and unobstructed. It is about 1,800 meters in length and 30 to 50 meters in width, and dates from the time of the German occupation.

A few concrete roads and an underground gasoline dump have been constructed since then. The dump is surrounded by a fence. There is only one aircraft hangar, measuring 50 by 30 meters, with a concrete floor.

The former gasoline dump was located near the control tower. Recently next to it there is an oil preheater. There is an underground gasoline dump near the railroad. The new underground gasoline dump <sup>equipment</sup> consists of two <sup>reservoirs</sup> with a capacity of about equivalent to five tank cars each.

The gun firing range for aircraft weapons is used regularly.

The barracks are three or four-story buildings.

Near the main guard post there is a metal tower 10 to 15 meters in height, surrounded by barbed wire. Since the guard post is fairly important, it is possible that the radio station has already been set up.

The ammunition dump is underground and can be identified only by its entrances, which are three in number. It contains mainly aerial bombs.

In the fall of 1944 there were permanently assigned:

30 to 40 light Russian bombers (two-engine) stationed at the field (type unknown)

Armament: one cannon in the turret  
two heavy machine guns fastened on the <sup>part of page missing</sup>  
two light " " " " " " " "  
one machine gun behind the \_\_\_\_\_ post (can fire upward  
and \_\_\_\_\_ (sideward?)  
one machine gun in the tail.

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These aircraft have a wingspread of about 12 meters, retractable landing gear. During this period the presence of the following has been noted:

2 1 German aircraft, Heinkel, "Bleistift" (Lead-Pencil) type

2 Italian aircraft

1 other German aircraft

Several Russian biplanes.

The airfield is essentially military.

Twelve Russian bombers are used for training pilots. Bombing practice is held. There is no parachute practice.

Personnel are divided into three groups (totalling 1,000 men):

Instructors

Student pilots

Guard units.

About 800 German prisoners of war work in the various airfield installations.

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#### Skoplje

The airfield is located one kilometer from the town. It has an area of two by six kilometers.

No concrete surfaces.

The buildings are in good condition except for one large one which had not yet been restored at the end of 1948. All the buildings are located south of the field.

The control tower and meteorological station are located at the side.

The four barracks buildings were in the following condition at the end of 1948:

2 completely reconstructed

1 almost completely reconstructed

1 in process of reconstruction.

Each building is 60 by 15 meters and consists of a ground floor and one upper story.

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At the center of the southern side of the field there are two metal pylons, 35 meters in height. In 1947 a ~~xxx~~ radio station was built side of them. On the same side, farther to the east, there is a warehouse 100 meters in length.

The aircraft are kept in five hangars made of iron and corrugated sheet metal, 20 by 40 meters in size.

The gasoline supply is in the southeastern corner of the field. A railroad coming from the west leads to it.

There are not more than 50 aircraft stationed at the field, fighters and combat aircraft of Russian type, carrying a crew of two men.

Air traffic is very heavy, but is halted at times by a shortage of gasoline.

Landing accidents are frequent.

There are very few transport aircraft, an average of two per month. Parachute practice has been held a few times, using Junkers 52's. There are no Russian personnel.

Sketch: Sombor Airfield, about 150 kilometers from Belgrade.

Scale: about 1:5,000

**Key:**

Vers Agatin -- toward Agatin

Vers Sombor -- toward Sombor

Palisade -- fence

Mess des officiers -- Officers' mess

Garage et atelier de réparations -- garage and repair workshop

Caserne -- barracks

Cuisines -- kitchens

Poste de garde -- guard post

Tour d'émission -- transmitting tower

Hangar d'avions -- aircraft hangar

Bétonné -- concrete

Tour de contr. -- control tower

Souterrain -- underground

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Station météorologique -- meteorological station  
 Pompe à essence -- gasoline pump  
 Magasin. -- warehouse  
 Vers Sombor -- toward Sombor  
 Stand de tir pour armes de bord -- firing range for aircraft weapons  
 Réservoirs d'es. souterrains -- underground gasoline storage tanks  
 Route (rte) bétonnée -- concrete road  
 Aire de garage pour avions -- area where aircraft are kept  
 Piste d'envol bétonnée -- concrete takeoff runway  
 Largeur 50 m. - long. env. 1500 m. -- width 50 meters, length about  
 1500 meters  
 Dépôt souterrain de munitions à 500 m -- underground ammunition dump  
 at 500 meters  
 Champ d'aviation -- airfield  
 Route vers dépôt de mun. -- road to ammunition dump  
 D.C.A -- antiaircraft defense

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#### Petrovac

The old Petrovac airfield, between Skoplje and Kumanovo, is supposed to have been enlarged and modernised.

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#### II. Command of Yugoslav Aviation and O.D.B. <sup>Air Corps</sup> ~~sig~~

Commander: General Zdenko Uleplic

Staff:  
 Chief of ~~Staff~~ <sup>Staff</sup>: Viktor Bubanj

Political commissar: Colonel Milija Stanisic

Commander of air schools: Major General Dusan Matejic.

#### First Division

Commander: Miuko Secepanovic

Third fighter regiment at Skoplje (50 YAK's, one transport aircraft, two Storchs)

524th (50 YAK's, models 1 and 2, one Pe 2, one Bucker trainer).

421st, at Kis (same aircraft and same number of them, plus one transport aircraft).

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**Second Division****SECRET**

113th fighter regiment at Cerklje (15 YAK's)  
 422nd, at Brestice (27 YAK's and two U 2 trainers)  
 423rd, at Velika Gorica (25 YAK's and two trainers).

**Third Division**

112th fighter regiment at Devica-Marlja (25 YAK's), one transport aircraft, two trainers)  
 128th fighter regiment (has been placed at the disposition of the navy).

**Fourth Division**

Commander: Colonel Savo Poljanec  
 41st bomber regiment (35 Pe 2's and two transport aircraft).

**Fifth Division**

524th bomber regiment at Ravna Gora (the aircraft are Soviet BB2's and SB3's).

All of this regiment's aircraft are used mainly for bomber training.

**Sixth Division**

Exists only in theory.

**Transport Groups at Zemun**

Commander: Lieutenant-Colonel Vlado Simic  
 Adjutant: Captain Ratko Niksic  
 Observer: Lieutenant Drakulic  
 Squadron commanders: Lieutenant Fabijanovic, Captain Popel.  
 Political commissar: Matijevic.  
 First squadron: has 10 Junkers 52's and two W 34's.  
 Second squadron: has 5 Bucker's, four U2's, two Storchs, two Pe 2's.  
 The meteorological school has been transferred from Kraljevo to Zagreb.

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Sketch: Skoplje Airfield (scale: about 1/40,000)

Key:

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Hotel (detruit) -- terminal (destroyed)

Tour de controle -- control tower

Casernes -- barracks

Station émetrice -- transmitting station

Hangars pour avions -- aircraft hangars

\* Antennes -- antennas

Magasin -- warehouse.

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### III. Movements of Units

Bomber regiments Nos. 411 and 412 have been transferred from the Ljubljana sector to Skoplje airfield.

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### IV. Transport Aviation

On the Yugoslav Aviation staff there is a section known as "Odeljenje Zavasduzni Saobracaj" (Air Transport Section), directed by Colonel Djordj Jovanovich, former officer in the Austro-Hungarian army, prisoner in Italy from 1941 to 1945.

1. Civilian air transportation has 24 aircraft at its disposal. The pilots and crews are all civilians but are under the military administration.

2. Military air transportation comprises two regiments, one stationed at Zemun, the other at Ljubljana. The total number of military aircraft available is 36, consisting of Douglasses, Junkers 52's, and two Avia Fockers (? & illegible).

The Zemun regiment comprises four squadrons of these aircraft each.

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### Miscellaneous

The regional air commands<sup>re</sup> -- Oblasne Komande (non-flying personnel) are six in number and have the prerogatives of the division commands.

1. Regional commander at Nova Sad
2. Regional commander at Skoplje
3. Regional commander at Mostar
4. Regional commander at Zagreb
5. Supposed to be at Sombor (under the reserves)
6. Is the commander of schools and is in Panoevo.

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## V. Russian Personnel

At the beginning of April there were three Russian officers attached to the Sixth Air Division: Gennko, Zalewsky, Grantcharov.

Eighteen Yugoslav officers who took the advanced course in the USSR returned two months ago and have been placed according to the different staffs.

## VI. Desertions in the Air Command

Three Yugoslav air corps officers landed in Rumania, escaping from Yugoslavia. They were: Colonel Choubec, <sup>27</sup> commander of the Belgrade air base, Captain ~~But~~ Dobitski, <sup>27</sup> chief of staff, and Abranovitch, commander of the parachutist air base at Belgrade.

Following a political rally at the Belgrade air base on the occasion of the criticism of the Kominform stand against the Yugoslav Communist Party, 15 officers declared that it was necessary to effect a reconciliation with the Kominform, cost what it might; they were placed under arrest. Among them was Lieutenant Colonel Rokonik.

A month ago the air corps Lieutenant Colonel Yovan Skede was also penalized for declaring himself in favor of Stalin and the USSR. He was subsequently sentenced to three years in prison by a court martial. At the reading of his sentence Yovan Skede replied, "Today you are the masters, but do not forget that some day the people will place you in the defendant's seat to give account for yourselves. Long live the heroic Soviet Union! Long live Stalin!"

These words caused his sentence to be increased from three to eight years.

At present the following are imprisoned in Yugoslavia:

General Danko Petrisovitch

Lieutenant ~~Slade~~ Dabjevitch

A hundred other officers who have declared themselves to be in favor of the USSR.

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CATALYTIC HYDROCONDENSATION OF CARBON MONOXIDE  
WITH ETHYLENE. II. INVESTIGATION OF THE LIQUID  
PRODUCTS OF HYDROCONDENSATION OF CARBON  
MONOXIDE WITH ETHYLENE.

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IZVESTIYA AKADEMII NAUK SSSR, OTDELNIYE  
KHIMICHESKIIH NAUK  
(Bulletin of the Academy of Sciences, USSR,  
Department of Chemical Science)  
1949, 326,32

This is a complete translation of the original article,  
except for sections of apparently minor importance,  
which are abstracted and distinguished by wide margins.

AUTHORS' SUMMARY

1. Products of hydrocondensation of carbon monoxide with ethylene were investigated.
2. It was established that the oily part of the condensate contains 2 - 3% by volume oxygenated organic compounds, the aqueous part 10%; propyl alcohol constitutes the major portion of these compounds.
3. The content of aldehydes amounts to 0.9% of the oil and to 1.9% of the reaction water. Propionaldehyde was identified; no ketones are present.
4. In the aqueous layer 1.5% by volume organic acids were found, of which 70% constitutes propionic acid.
5. The data obtained reveal that oxygenated compounds with 3 carbon atoms in the molecule, i.e., those resulting from interaction of 1 molecule carbon monoxide with 1 molecule ethylene, predominate.
6. The hydrocarbon portion of the liquid condensate is a complex mixture of aliphatic saturated and unsaturated hydrocarbons boiling within a wide temperature range.
7. The presence of fractions corresponding to hydrocarbons with even (C<sub>6</sub> and C<sub>8</sub>) and odd (C<sub>5</sub> and C<sub>7</sub>) numbers of carbon atoms was shown by distillation. These compounds result from interaction of ethylene and its polymers with methylene radicals.

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8. The methylene radical and not carbon monoxide participates in the formation of hydrocarbons. This is confirmed by the fact that condensation of carbon monoxide with ethylene does not take place in the absence of hydrogen.

The catalytic hydrocondensation of carbon monoxide with ethylene was previously described. In the present work some results of the study of liquid reaction products obtained from the mixture  $\text{CO} : 2\text{H}_2 : 3\text{C}_2\text{H}_4$  at  $190^\circ$  are reported. Assuming that oxygenated compounds will be present in the condensate simultaneously with hydrocarbons and water, the oily as well as the aqueous portion of the condensate was studied. The data obtained permitted an estimate of the amount of oxygenated compounds in the oil as 2 - 3% by volume. They consist principally of propyl alcohol, identified as the ester of 3-nitrophthalic acid (m.p.  $141^\circ$ ). No alcohols of a higher molecular weight were found in the oil. In the aqueous portion of the condensate up to 10% by volume oxygenated compounds were found, for the most part also propyl alcohol. Aldehydes assume 0.9% in the oil and 1.9% in the reaction water. Only propionaldehyde was identified as the dimedone derivative (m.p.  $155^\circ$ ). Ketones were absent. The aqueous layer contained 1.5% by volume organic acids, of which over 70% consisted of propionic acid, identified as its silver salt.

These data undoubtedly show that oxygenated compounds with 3 carbon atoms in the molecule predominate, which in turn indicates that reactions involving the interaction of 1 molecule of ethylene with 1 molecule of carbon monoxide play an important part in the formation of these compounds. As previously assumed, hydrogen also participates in these reactions and thus triplet reactions, shown in the first communication of this series under II, take place (1).

An investigation of the major portion of the liquid hydrocarbons freed of gases confirmed the authors' view on the hydrocondensation of carbon monoxide with ethylene as previously stated (1). The hydrocarbon portion of the liquid condensate was found to be a complex mixture of aliphatics, saturated and unsaturated hydrocarbons boiling within  $27$  and  $420^\circ$ . This mixture resembles synthin. Fractionation under a column of 40 theoretical plates indicates the presence of hydrocarbons with odd numbers of carbon atoms:  $\text{C}_5$  (fractions  $29 - 39^\circ$ ) and  $\text{C}_7$ , as well as those with even numbers of carbon atoms,  $\text{C}_6$  and partly  $\text{C}_8$ , as shown by the plateaus on the distillation curve shown in Fig. 1. Fractions  $\text{C}_5$  and  $\text{C}_7$  indicate that methylene radicals are formed by hydrogenation of carbon monoxide and participate in the formation of hydrocarbons, as postulated previously (1). Condensation of ethylene with carbon monoxide in the absence of hydrogen confirmed that methylene radicals and not carbon monoxide molecules participate in these processes. When mixtures of ethylene and carbon monoxide

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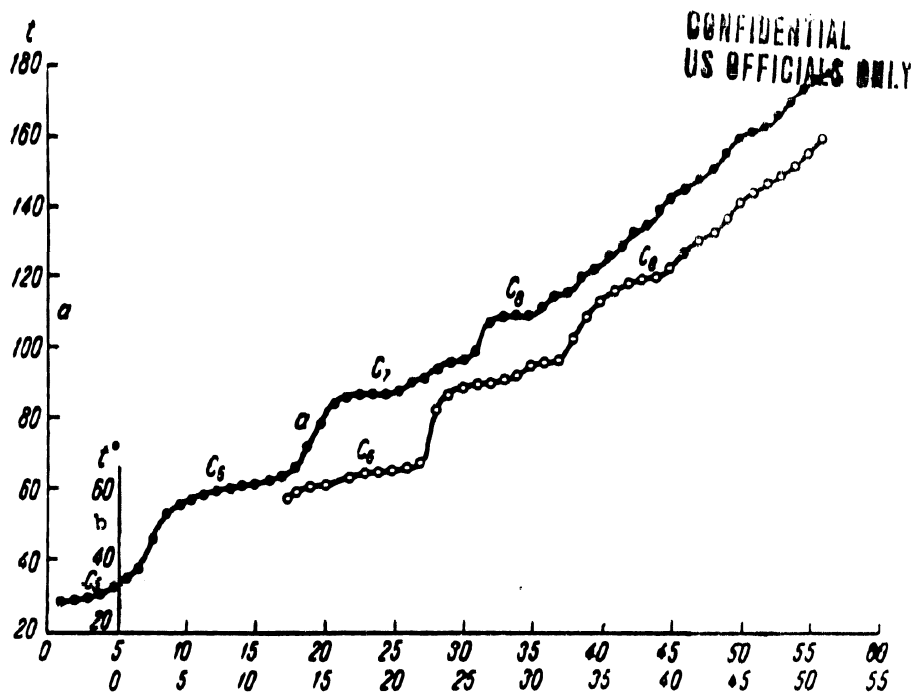


FIG. 1.

TABLE 3

Fraction No.	Boiling Range, °C	Per Cent by Volume on the Initial Oil	$d_4^{20}$	$n_D^{20}$	Bromine No.	Per Cent Unsaturated
1	27—60	12,5	0,6470	1,3760	143	67
2	60—71	10,5	0,6909	1,3880	101	57
3	71—119	15,0	0,7081	1,4017	69	46
4	119—160	13,5	0,7285	1,4130	73	56
5	160—255	20,0	0,7698	1,4281	39	40
6	255—343	12,0	0,7876	1,4412	20	34
7	343—420	4,0	—	—	—	—
Initial Oil	—	—	0,7226	1,4203	74	56

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were passed over the catalyst under the same conditions no condensation took place.

In the fractions of the product obtained by hydrocondensation in the presence of hydrogen, the content of unsaturated hydrocarbons drops with rise of the boiling range of the fractions.

#### EXPERIMENTAL PART

The liquid product of hydrocondensation of carbon monoxide with ethylene was divided into an oily and an aqueous part. The first was obtained by combining the "heavy oil," which was condensed in the first receiver at room temperature, with the "light oil" collected in the second receiver at  $-30^{\circ}$ . In the oil as well as in the reaction water the oxygenated compounds were determined, that is, alcohols, acids, aldehydes and ketones.

The oil separated from the reaction water and gas was treated with a 5 N aqueous solution of sodium hydroxide and repeatedly washed with water. From the mixture of the alkaline extract with wash water neutral organic compounds were extracted by the method of Kousalinskii and Bolintoreva (2), which is based on distilling over part of the solution, followed by salting out with n-butanol. The sodium salts of the acids contained in the alkali residue were converted into silver salts. The oil was washed with alkali and water, dried and fractionated. Specific gravities and refractive indexes were determined for individual fractions and the contents of unsaturated calculated from their bromine numbers. The reaction water was treated with 5 N aqueous sodium hydroxide and the method of salting out (2) again applied. Usually the reaction water was combined with the mixture of the alkali extract and wash water from treating the oil. In individual cases the oil separated from the aqueous layer and dried was fractionated, and the individual fractions investigated for the oxygenated compounds contained in them.

Alcohols were identified as esters of 3-nitronaphthalic acid by reacting them with the anhydride of this acid (3). Alcohols boiling above  $100^{\circ}$  were determined as their esters by reaction with acetic anhydride followed by hydrolysis with titrated alkali and titrating back the remaining alkali. The aldehydes were identified by their reaction with dimedone (6). Their quantitative determination was based on the oxonometric method (7) and the iodometric (8), both giving well agreeing results.

For the investigation of the liquid products of hydrogen condensation of carbon monoxide with ethylene, 400 ml. oil and 120 ml. reaction water were accumulated, obtained in prolonged tests, using a series of catalysts of the same composition.

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### Alcohol

From 250 ml. oil treated as described above 3 ml. organic compounds were obtained. From 100 ml. reaction under 10 mm. evaporated compounds were recovered. The two were combined, dried over calcium potash, distilled into 3 fractions and each separately treated with 3-ethoxyethyl ether and dried. The obtained crystals melted at 140.7 - 141.1° and gave no depression of the melting point when stirred with anhydrous methyl 3-ethoxyethyl ether.

### Acid

The residual portion of oil after solution obtained in treatment of the 250 ml. oil portion with sodium hydroxide, as indicated above, was freed of neutral evaporated compounds by distillation, evaporated to dryness, the residue decomposed with 10% sulfuric acid, extracted with ether, the liquid acid converted first into barium barbiturate and then into the silver salt, the analysis of which identified it as propionic acid.

### Aldehyde and Ketone

A sample of oil not treated with alkali and water showed 0.92% by volume content of aldehydes calculated as propionaldehyde by both the organosoluble and fuchsinic methods. In the reaction water the organosoluble method established 1.85% by volume aldehyde calculated as propionaldehyde, the fuchsinic, 1.9%.

### Hydrocarbons

Fractions of a 200 ml. portion of oil washed with alkali and water and dried with anhydrous sodium sulfate gave the data shown in Fig. 1 (Curve b); the fraction 27 - 160° is not represented on this curve. The fractions represented by the data of Table 3, 51% by volume, were distilled off within 27 - 160°. The fraction 5, 160 - 255°, was redistilled, and higher boiling fractions were redistilled separately. The distillation curves a and b (Fig. 1) are identical in character. The curve c refers to the

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distillation of a 53 ml. sample of the oil freed of reaction water and gas and dried over anhydrous copper sulfate. It had a  $d(20/4)$  0.7364 and  $n(20/D)$  1.4150, and was distilled under a column of 40 theoretical plates packed with metallic helices, a 56.4% by volume distilling within 27 and 179°. Both curves reveal plateaus corresponding to hydrocarbons with 6, 7 and 8 carbon atoms. Tables 1 and 2 report the data of these two distillations and indicate the volume per cents of the various fractions calculated on the total condensate boiling within 27 and 120°.

The curve a reveals a fraction with five carbon atoms amounting to 6.6%.

Table 1

Boiling range, °C	29-39	39-55	55-73	73-87	87-100	100-112	112-129	129-151
Per cent by volume	6.6	1.2	10.3	2.8	9.4	4.7	5.7	6.6
C <sub>x</sub>	C <sub>5</sub>	--	C <sub>6</sub>	--	C <sub>7</sub>	--	C <sub>8</sub>	C <sub>9</sub>

Table 2

Boiling range, °C	59-68.5	68.5-88	88-103	103-110	110-128	128-147
Per cent by volume	9.5	2.0	9.0	1.0	7.0	6.0
C <sub>x</sub>	C <sub>6</sub>	--	C <sub>7</sub>	--	C <sub>8</sub>	C <sub>9</sub>

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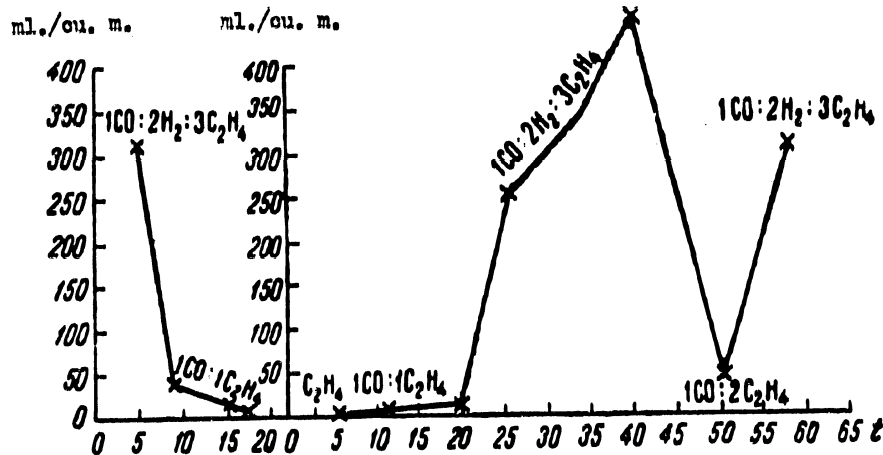


FIG. 2.

TABLE 4

Catalyst	Experiment No.	Feed Gas	Duration of Experiment, Hours	Space Velocity	Per Cent Contraction	Yield, ml./cu. m.				Yield of Heavy and Light Oils, ml./hr.
						Heavy Oil	Light Oil	Sum of Heavy and Light Oils	Water	
20	132	1CO : 2H <sub>2</sub> : 3C <sub>2</sub> H <sub>4</sub>	6,5	89	57,3	100,5	214,6	315,1	53,8	25,7
20	133	1CO : 1C <sub>2</sub> H <sub>4</sub>	2,0	99	4,8	0,0	39,8	39,8	3,5	3,5
20	134	1CO : 1C <sub>2</sub> H <sub>4</sub>	5,5	76	3,2	8,0	8,0	16,0	8,0	1,1
20	135	1CO : 1C <sub>2</sub> H <sub>4</sub>	4,5	96	7,4	8,3	4,1	12,4	8,3	1,2
6	136	C <sub>2</sub> H <sub>4</sub>	6	134	10,9	0,0	0,0	0,0	0,0	0,0
6	137	1CO : 1C <sub>2</sub> H <sub>4</sub>	7	132	10,8	0,0	4,7	4,7	0,0	0,56
6	138	1CO : 1C <sub>2</sub> H <sub>4</sub>	7	123	8,3	2,5	2,5	5,0	0,0	0,56
6	139	1CO : 2H <sub>2</sub> : 3C <sub>2</sub> H <sub>4</sub>	7	125	48,7	100,1	149,6	249,7	25,0	28,5
6	140	1CO : 2H <sub>2</sub> : 3C <sub>2</sub> H <sub>4</sub>	7	127	60,7	144,1	196,9	341,0	54,3	39,3
6	141	1CO : 2H <sub>2</sub> : 3C <sub>2</sub> H <sub>4</sub>	7	86	61,9	139,8	316,9	456,7	74,6	35,5
6	142	1CO : 1C <sub>2</sub> H <sub>4</sub>	11	103	7,0	27,2	15,8	43,0	11,5	4,0
6	143	1CO : 2H <sub>2</sub> : 3C <sub>2</sub> H <sub>4</sub>	5	125	50,9	63,0	244,7	307,7	28,1	35,2

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The condensate is seen to consist of a mixture of aliphatic hydrocarbons, over half of which are unsaturated (Table 3). The fractions 1, 4 and 6 were boiled over metallic sodium for 7 hours and subjected to a bromine number test, which showed almost no change, and gave 137, 73 and 20, respectively.

#### Condensation in the Absence of Hydrogen

The important part played by methylene radicals in the condensation of carbon monoxide with ethylene was pointed out above. Experiments in which carbon monoxide was condensed with ethylene in the absence of hydrogen are reported in Table 4 and Fig. 2, and those numbered 133-135, 137-138 and 142 confirm that virtually no condensation occurs in the absence of hydrogen; consequently, that it is methylene radicals and not molecules of carbon monoxide which participate in the reaction. The small amounts of products (12-16 ml./cu. m.) can be ascribed to the presence of a slight amount (3 - 4%) of hydrogen in the initial gas mixture.

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